An Investigation of Allegations of Ambient Asbestos Impacts From a Wood Products Facility

Prepared for:
Forman Watkins Krutz & Tardy LLP
Jackson, Mississippi

On behalf of:
Weyerhaeuser

Prepared by:
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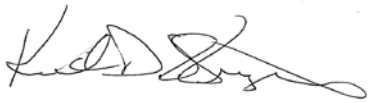
ENVIRON

Signature and Certification

Based on my qualifications and experience as well as a thorough review of the facts of this investigation, I certify that the current report reflects my true and correct analysis and conclusions.



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Acronyms and Abbreviations

AERMOD	A computer program developed under EPA contract, with direction from EPA and the American Meteorological Society to compute downwind concentrations of air pollutants from known or estimated emission rates at specific emission sources.
f/cc	Fibers per cubic centimeter, also the same as fibers per milliliter. A unit of asbestos concentration measurement in air.
f/l	Fibers per liter, equivalent to f/cc * 1000
t/y, t/day	Tons per year, tons per day

1 Introduction

My name is Kirk D. Winges and I am a Principal Consultant with Environ International Corporation in Lynnwood, Washington. I was asked by Forman Watkins Krutz & Tardy LLP to provide opinions and analyses related to a series of cases alleging exposure of plaintiffs to asbestos fibers through, among other processes, ambient air dispersion.

1.1 Background for Kirk Winges

I am an atmospheric scientist and have been practicing in the field of air quality consulting for over 37 years. A complete copy of my resume is provided as Appendix A. My primary area of expertise is air quality modeling, the application of computer programs to simulate the transport and dispersion of airborne pollutants. I have conducted several hundred air quality modeling investigations in my career for many different types of emission sources in many different environmental settings. I have modeled power plants, smelters, pulp/paper mills, oil refineries, coal mines, aluminum reductions plants, coal gasification plants, food processing plants, sewage plants, painting operations, rendering plants, asbestos from mining operations and many others. I have modeled facilities located in a wide variety of meteorological and topographic settings including the Arctic Ocean, in tropical settings, in desert settings, in mountainous settings and many others.

Air quality modeling, my major practice area within atmospheric science, has grown in the last 50 years to be one of many major scientific activities performed by atmospheric scientists. Air quality modeling plays an important role in determining air quality in ambient air. It is now a standard scientific technique, used throughout the world by government agencies, major industries, academic institutions and private consultants to estimate concentrations of air contaminants for historical reconstruction, or future prognostication. Even for contemporary concentrations, models can provide useful estimates of ambient air concentrations.

Atmospheric science is completely distinct from industrial hygiene where the interest is on determining workplace concentrations or concentrations very close to working equipment or other emission sources. Air quality modeling was developed to determine outdoor air concentrations at some distance from a source of emissions where the atmospheric processes have an influence on air concentrations through transport and dispersion. Determination of community concentrations from an industrial source of emissions is the most common application of air quality modeling.

1.2 Central Issue Addressed in the Current Case

Weyerhaeuser Company owned and operated a facility in Marshfield, Wisconsin that manufactured, among other things, fire-proof doors in the 1960s and 1970s, some of which contained asbestos. The plaintiffs in these cases are all former employees at the facility. The complaints in these cases indicate that, in addition to concentrations of asbestos they experienced in the workplace, the plaintiffs also allege they experienced elevated ambient air concentrations of asbestos in the Marshfield community.

The question I have been asked to address is, “Have plaintiffs presented reliable evidence to suggest they experienced elevated concentration levels of asbestos fibers in the ambient air in the Marshfield community?”

1.3 Available Information for My Opinions

My opinions in these cases are based on information from a variety of sources and ultimately rely on my own professional judgment from over 30 years of air quality consulting experience. The sources of information I used in forming my opinions are as follows:

- I was provided a technical report completed by Mr. Frank Parker, expert for the plaintiffs, documenting his opinions in the case.
- I was provided a copy of several plaintiff-specific reports produced by Mr. Parker that adapt his overall opinions to specific plaintiffs.
- I was provided a copy of the expert report prepared by Dr. Henry Anderson, expert for the plaintiffs, documenting his opinions in the case.
- I was provided copies of expert reports by Dr. James Johnson and Dr. Jerrold Abraham, experts for the plaintiffs, documenting their opinions in the case.
- I was provided a report of ambient air quality modeling of particulate matter conducted for the Wisconsin Department of Natural Resources in the mid to late 1970s.
- I was provided copies of the complaints filed in these cases by Plaintiffs Jacobs, Heckel, Boyer, Masephol, Seehafer and Sydow.
- I was provided a copy of the deposition of Mr. Joseph Wendlick, former employee of Weyerhaeuser.
- I was provided copies of a number of technical papers and reports that had previously been referenced in these cases.
- I was provided a copy of ambient air asbestos testing results collected by Joe Wendlick and Van Fidino in June of 1984 at Marshfield and several other locations in Wisconsin.
- I gathered new information from internet searches and technical references to augment and document my knowledge and understanding of asbestos.

1.4 Outline of the Report

Section 2 of the report gives a general discussion of air quality ambient impact concepts that will assist the reader in understanding the technical concepts that are discussed in this report. Section 3 reviews

the evidence provided by plaintiffs in these cases, specifically the reports of plaintiffs' experts Mr. Parker and Dr. Anderson. Section 4 presents my conclusions and findings based on the information I reviewed in these cases.

2 Air Quality Impact Concepts

2.1 General Concepts

Inhalation of any air pollutant is defined by two factors: the concentration and the length of time one was breathing air with that concentration. The concentration refers to the quantity of the pollutant per unit volume of air being inhaled. In reality, concentration is constantly changing for all contaminants in the air we breathe so typical calculations of long-term concentration are broken into smaller steps for which an average or typical concentration can be assumed and the results averaged over time.

Typically, most industrial facilities control access by the general public to the workplace environment, so that the air quality within a facility's controlled area of access is the workplace environment, while areas outside of the controlled access is referred to as ambient air.[1] The critical information for my current investigation is determination of the average concentration of fibers in the air (f/cc) over time in the Marshfield community.

There are only two reliable scientific ways to determine ambient air concentration:[2]

1. Measure the concentration using well-established scientific methods for ambient air measurements.

2. Use a computer model to estimate the concentrations from other known information.

Measurements are considered the gold standard, are the preferred method for determination of airborne concentrations, and should be used whenever possible. Measurements, however, have limitations. Obviously, they cannot predict the future, and they can only inform about the past if measurements were taken in the past. Also, measurements are taken at discrete locations, and their use to inform concentrations at other locations must be done with assumptions, such as interpolation.

Since the 1960s, researchers have been developing air quality models to facilitate the process of determining concentrations of air pollutants, without actually taking ambient measurements. Air quality models are not intended to replace measurements. Rather, air quality models are intended to provide estimates where no measurements are possible, or to fill in gaps between measurements.

2.2 Air Quality Modeling

Air quality modeling refers to the use of mathematical calculations, usually done on a computer, to estimate the concentrations of pollutants in the air. These models are widely used to estimate ambient concentrations of air pollutants.[3] These are usually very complicated computer programs that attempt to

[1] See 40 CFR Part 50.1(e).
[2] See for example, National Association of Clean Air Agencies (NACAA) http://www.cleanairworld.org/TopicDetails.asp?parent=21.
[3] http://www.epa.gov/ttn/scram/.

simulate the complex processes that happen to air emissions after they are released from an emission stack or other source, and are transported and mixed in the air as they are carried downwind. The user must provide the model with information and the model in turn calculates estimates of concentrations in the air. The types of information the user must provide the model can be grouped into three categories as follows:

1. **Emission data**. This is information on the sources of emissions to the atmosphere including their locations, the rate and height at which they are released, the temperature of the released gases, and many other factors concerning the nature of the emissions and how they are released to the atmosphere. The most critical of these data are the emission rates, or the quantity of each contaminant emitted by a source. Determination of emission rates is done either through direct measurements, or from published studies of emissions at similar facilities that can be used to develop emission factors, the quantity of pollutant emitted per unit of operation.[4]

2. **Meteorological Data**. The user must provide the model with information on atmospheric conditions at the time emissions are released. For example, the most important meteorological information is the wind speed and wind direction, but there are other meteorological variables that are needed by the model as well such as the temperature and the amount of turbulence in the air. Typically, large volumes of meteorological data are needed such as hourly averaged values of the wind speed and wind direction for a year or several years of record. Meteorological data for use in air quality modeling are readily available from a variety of sources, such as the National Climatic Data Center (NCDC).[5] These data are free and commonly used by air quality modelers throughout the U.S.

3. **Receptor Information**. Receptors are the locations where the user wants the model to calculate concentrations. The user must tell the model where to compute concentrations and other information about these locations such as the terrain elevation of the location.

Most air quality models were originally designed for modeling specific chemicals, such as carbon monoxide or sulfur dioxide. A good example of such a model is the current EPA-recommended model, AERMOD.[6] These chemicals have established allowable levels in the atmosphere and the EPA and other agencies have needed to develop air quality models to make estimates for comparison with these allowable levels. The EPA provides formal guidance on the use of air quality modeling to estimate ambient air concentrations.[7]

[4] See for example, EPA, Technology Transfer Network, Clearinghouse for Inventories and Emission Factors. http://www.epa.gov/ttnchie1/ap42/.
[5] National Climatic Data Center, National Oceanographic and Atmospheric Administration, http://www.ncdc.noaa.gov/data-access.
[6] http://www.epa.gov/ttn/scram/dispersion_prefrec.htm.
[7] See for example, 40 CFR Part 51, http://www.epa.gov/ttn/scram/guidance/guide/appw_05.pdf.

A good discussion on the use of air quality modeling to estimate ambient air concentrations of asbestos fibers is provided in Berman and Kolk.[8] The State of Nevada included reference to this same technique in Guidance for addressing asbestos risks.[9] Air quality modeling of asbestos fibers, if properly conducted, can provide useful information on ambient air concentrations of asbestos fibers.

[8] Berman, D. and A. Kolk, "Modified Elutriator Method for the Determination of Asbestos in Soils and Bulk Material", Mayt 23, 2000. http://www.labcor.net/files/Modified_Elutriator_Method.pdf.

[9] Black, P. "Technical Guidance for the Calculation of Asbestos-Related Risk in Soils for the Basic Management Incorporated (BMI) Complex and Common Areas" https://ndep.nv.gov/bmi/docs/090424_asbestos_guidance_apr09.pdf.

3 Analysis of Plaintiff Reports

Plaintiffs in these cases retained Mr. Frank M. Parker, III, an industrial hygienist, to provide expert opinion on asbestos exposure. Mr. Parker produced a report entitled "Asbestos – Worker, Community and Household Exposures, Roddis Plywood Co./Weyerhaeuser Co., Fire Door Manufacturing Operations, Marshfield, Wisconsin" dated January, 2015. I have reviewed this document and several other documents produced by Mr. Parker in connection to these cases, including:

- Supplemental letter report dated January 30, 2015
- A list of "facts, data and assumptions" he used in forming his opinions, dated January 30, 2015
- A letter report detailing his opinions regarding the exposures of Mrs. Rita Treutel, dated January 30, 2015
- A letter report detailing his opinions regarding the exposures of Mr. Wes Sydow, dated January 29, 2015
- A letter report detailing his opinions regarding the exposures of Mr. Roger Seehafer, dated January 30, 2015
- A letter report detailing his opinions regarding the exposures of Mr. Valmore Prust, dated January 30, 2015
- A letter report detailing his opinions regarding the exposures of Mr. Urban Pecher, dated January 29, 2015
- A letter report detailing his opinions regarding the exposures of Mr. Richard Masephol, dated January 28, 2015
- A letter report detailing his opinions regarding the exposures of Mrs. Sharon Heckel, dated January 30, 2015
- A letter report detailing his opinions regarding the exposures of Mr. Milton Boyer, dated January 29, 2015

In addition to Mr. Parker, I have reviewed the expert reports of Dr. Henry A. Anderson. Dr. Anderson is a medical doctor and much of his report concerns the evidence of human health effects associated with exposure to asbestos as well as the history of the understanding of such health effects. Dr. Anderson relies on Mr. Parker's reports for much of his information on the Weyerhaeuser Marshfield facility, however Dr. Anderson does provide an account of previous investigations concerning community exposure to asbestos that I will address.

In addition to the reports of Mr. Parker, I read, but do not include any analysis of reports by other plaintiff experts, including Dr. James S. Johnson and Dr. Jerrold L. Abraham. These two experts are medical doctors and provide information on the human health impacts of asbestos exposure but do not provide any additional information on ambient exposures to asbestos.

3.1 Report of Mr. Frank Parker

Mr. Parker is an industrial hygienist, and his expertise lies primarily in workplace settings. Mr. Parker's expert report provides no indication of any expertise or knowledge of air quality modeling techniques or analyses. Much of his report concerns workplace conditions and concentrations. Since my focus is solely on ambient concentrations of asbestos, I will not provide evaluation of those topics he discusses concerning workplace conditions or exposures.

Much of his discussion on alleged ambient exposures is through non-scientific anecdotal information. Examples of this are found on Page 7, under Item g, Page 10 (top of page), Page 10, under Items b, c, d and e. None of these anecdotal descriptions provide any information on asbestos, nor do they provide any useful information on the concentrations of asbestos in Marshfield. My own experience is that most forest products facilities are very dusty environments, irrespective of whether they handled asbestos materials or not, so that the indication that there were complaints about dust from the facility in the 1960s is in no way indicative of asbestos impacts to the community.

Similarly, Parker provides a number of examples on page 11 of his general report of collection system failures at the plant (item b., sub items i through iv). Baghouses and other dust control systems do fail from time to time at all industrial facilities. These are episodic cases and not reflective on long-term average concentrations. Of the four items listed on page 11, only item ii refers directly to asbestos-containing dust, but it gives no quantification or other information that would allow any determination of the concentration of asbestos fibers in the air. The others are simply anecdotal descriptions of dust impacts that provide no scientific evidence of asbestos concentration.

There are other similar references to anecdotal descriptions of dusty environments on the site that have presumably been provided to indicate that the Weyerhaeuser facility was a dusty environment that would have allowed dust, including asbestos, to leave the site and impact the community. This is done by inference without any reliable, scientific evaluation to determine the level of asbestos fibers in the community.

The only scientific data Mr. Parker provides that might have some relevance to asbestos concentrations in the community are references to measurements that Weyerhaeuser industrial hygienist, Mr. Joseph Wendlick, made of asbestos concentrations. I will discuss each of these items individually.

3.1.1 Landfill Measurements Do Not Reflect Community Concentrations

On page 10, under item f, Mr. Parker provides the following information:

> "*In 1975 Mr. Wendlick reports on a series of air samples taken at the mineral core dump sites. Concentrations ranged from 0.019 f/cc ¼ mile away to 0.445 f/cc 100 feet away from the site used to dispose asbestos containing wastes.*"

These measurements were taken 14 miles outside of Marshfield at a Landfill. These measurements were certainly not representative of community concentrations in Marshfield. They were taken during an active dumping operation, inside the landfill and are not ambient measurements. They have no relevance to airborne asbestos concentrations any of the plaintiffs would have experienced while in Marshfield. They are short term measurements, during active dumping operations, not reflective of longer-term averages.

The only way these measurements might have been used to determine community concentrations of airborne asbestos fibers would be to use these measurements to define emission rates of asbestos fibers during the dumping operations at the landfill. Then, periods when any dumping activity occurred at the landfill could be modeled using standard air quality modeling techniques to determine community levels 14 miles away in Marshfield. The plaintiffs have not provided any such modeling analysis, so these measurements do not provide any scientifically valid information on concentrations in Marshfield.

3.1.2 Outdoor Air Concentrations at the Workplace

In several places in his report, Mr. Parker refers to measurements of asbestos concentrations taken at the Weyerhaeuser facility. In two of these discussions, he refers to concentrations measured near sources of emission taken outside of structures at the Weyerhaeuser facility, but still within the facility boundary and hence not ambient air measurements. It has been my experience from working for numerous large industrial facilities that handle large volumes of bulk material, such as asphalt batch plants, phosphate fertilizer facilities, Portland cement plants, and many others, that some sources of emission in the open air, but within the facility boundaries, are considered part of the facility's potential emission sources by the regulatory agencies involved. The specific references in Mr. Parker's report are:

- Page 12, under Heading 3, item b. "*In June 1975 Mr. Wendlick reports on two samples that measured airborne asbestos concentrations in the plant yard of 0.165 f/cc [wet transfer] and 11.2 f/cc [dry transfer] within 20 feet of the Core Mill baghouse during the transfer of dust from the baghouse to the truck.*"

- Page 12, under Head 4, item d. "*One 23 minute sample [#143 WY02-000128] collected in October 1976 was identified as "Load Waste in Truck" indicated some 2.68 f/cc. Another sample in 1976 measured some 1.34 f/cc [WY02-000138]; another in 1977 1.1 f/cc [WY02-000434]. The OSHA standard at this time was 2 f/cc.*"

Of course all of these are workplace concentrations not community concentrations, so they do not tell us the level of asbestos concentration a person might have experienced living in the surrounding community. They do, however, give some indication of the workplace concentrations that a worker transferring mineral wastes into trucks may have experienced. This is important information when comparing the worker concentrations to those in the community.

3.1.3 Community Measurements

The only scientific data cited by Mr. Parker that provide any indication of the airborne concentration of asbestos in the community are on page 10 of his report, under item g:

> "*In Mr. Wendlick's deposition he reports collecting five air samples in the community. Three were collected north of the railroad tracks and two south of Fourth Street. Results ranged from 0.003 to 0.005 f/cc. In 1984 the National Research Council reviewed all studies available and estimated that the median outdoor air (ambient) concentration was 0.00007 f/cc [Range = 0.00002 to 0.00075 f/cc].*"

What is immediately noticeable about these measurements is how much lower they are then the values quoted as workplace concentrations. The values he references when describing workplace concentrations range from 0.165 f/cc to 82 f/cc. When the workplace values are compared to the 0.003 to 0.005 f/cc values in the community, taken a few blocks from the facility in 1974, we can see that community concentrations were several orders of magnitude lower than anything experienced at the facility.

Mr. Parker argues that the community measurements are higher than background levels, referring to a 1984 summary from the National Research Council, where they quote the range of ambient measurements as 0.0002 to 0.00075 f/cc. There are many other studies of background asbestos concentrations that have a much wider range of concentrations. For example, a study by the University of Illinois at Chicago summarized data from the World Health Organization on background asbestos concentrations, and gave a range from "not detected" to 0.008 f/cc for urban outdoor air.[10] This would put the measurements in Marshfield clearly in the range of background concentrations.

More evidence that the levels in Marshfield are representative of background concentrations is the fact that, in 1984, Mr. Wendlick and a colleague returned to take additional asbestos samples in the Marshfield area and additional locations in central Wisconsin.[11] The values measured ranged from 0.003 f/cc to 0.008 f/cc. So despite these samples being taken 6 years after the cessation of asbestos-product manufacturing at the Weyerhaeuser plant, the concentrations in the community had not changed. This strongly suggests these are background values for the area, not the result of emissions from the Weyerhaeuser facility.

For all these reasons, I conclude that the only relevant scientific information Mr. Parker cites suggest that community levels of asbestos were within the range of background concentrations. He has conducted no modeling analysis to determine community concentrations, so these background concentrations are the only information plaintiffs have provided concerning airborne asbestos levels in the community.

[10] http://www.docstoc.com/docs/27078223/Appendix-E-Ambient-Levels-of-Asbestos.
[11] 1984 Sampling Data – Wendlick.

3.1.4 Estimate of Emissions

One last point worthy of discussion is a brief section of Mr. Parker's report starting at the bottom of page 10 and running over to page 11:

> "*If we take a very conservative fugitive emission rate of 1% and based on Rennord's estimates, then Weyerhaeuser most likely emitted into the local community some 1.2 ton/year of chrysotile and 2.35 tons/ year of Amosite asbestos.*"

Mr. Rennord, a Weyerhaeuser employee, prepared a proposal for a new facility to manufacture asbestos-core doors at the facility, and part of his estimate involved the calculation of the quantity of chrysotile and amosite asbestos that would be needed per year. But Mr. Parker's estimate that 1% of this material would be emitted to the atmosphere is without any basis. This is not a scientific method for determination of emissions. Proper scientific determination of emissions is done either through direct measurement of the actual emission source, or through the use of measurements at similar facilities that allowed the development of emission factors that in turn relate emission rate to some measureable operations parameter, such as production rate. Arbitrary postulates of percentage losses, without any engineering or scientific calculations would not be considered a valid method for determination of emissions.[12]

Mr. Parker refers to his 1% estimate as a "conservative" estimate, implying that it might even be higher than the 1% level quoted. I have worked in the field of fugitive dust emissions for most of my career and such an emission rate is unquestionably high. Consider for example, EPA's emission factor for sanding and sawing of laminated strand lumber.[13] The combined emissions from these operations are 0.462 lb/1000 ft^3 of product. A cubic foot of laminated strand lumber weighs about 30 pounds, so the emission factor is 0.462 lb of dust for 30,000 pounds of wood product.[14] That means about 0.0015%, not 1% as Mr. Parker assumes.

3.2 Report of Dr. Henry Anderson

Dr. Anderson is a medical doctor and as mentioned above, much of his report addresses the human health hazards of asbestos. He also provides no evidence of any experience with ambient air quality modeling in his technical reports in these cases. In my analysis of his report, I am concerned only with his comments concerning the role or impact of environmental concentrations. He discusses in several places in his report, most notably on pages 14 and 15, evidence that high levels of exposure from asbestos that occur in communities can contribute to risk of disease. However, the case studies he quotes are indicative of people exposed at very high levels. For example, the Wagner 1960 study involved people in the immediate vicinity of a large asbestos mining operation in South Africa. It is likely from the description of the conditions in the first half of the 20th century that exposures were high. For

[12] See for example, http://www.epa.gov/ttn/chief/efpac/abefpac.html.
[13] US EPA Compilation for Air Pollutant Emission Factors, Document AP-42, Section 10.9, Table 10.9-7. http://www.epa.gov/ttn/chief/ap42/ch10/final/c10s09.pdf.
[14] http://www.fpl.fs.fed.us/documnts/fplgtr/fplgtr190/chapter_12.pdf.

example, one description was of a case where the person lived in the vicinity of an asbestos mill from the ages of 1-7 and played on the dumps containing asbestos. It is unclear that exposures in this study were at all similar to those in Marshfield. Dr. Anderson makes no attempt to relate the exposures of these individuals to those in Marshfield.

Dr. Anderson makes reference to two earlier studies, one in Casale Monferrato, Italy[15], and one in Barcelona, Catalonia[16], that investigated alleged community impacts from industrial facilities that manufactured cement containing asbestos. The facilities are quite different than the Weyerhaeuser facility in that they manufactured cement and cement products, not fire-proof doors. More importantly, they were much larger industrial facilities, handling between 14,000 and 15,000 tons of asbestos annually, and operating from 70 to 90 years. According to Mr. Parker, the Weyerhaeuser Marshfield facility handled 352 tons per year of asbestos, or roughly two percent of the volume handled in these large European facilities. Also, the period of operation of the Weyerhaeuser facility is much shorter than the European facilities. Given the large differences between these European facilities and the Weyerhaeuser facility in terms of the type of facility, the size of the facility and the length of operation, these European studies have no relevance to community impacts in Marshfield.

As with Mr. Parker, Dr. Anderson has done no calculation or analysis using any standard, reliable scientific method to estimate the actual community concentrations plaintiffs may have had. His conclusion that community concentration played a significant role in plaintiffs overall exposure is without basis.

[15] Magnani, C., Dalmasso, P., Biggeri, A., Ivaldi, C., Mirabelli, D., Terracini, B., "Increased Risk of Malignant Mesothelioma of the Pleura after Residential or Domestic Exposure to Asbestos: A Case-Control Study in Casale Monferrato, Italy", Environmental Health Perspectives (109) 9 September 2001.

[16] Tarres, J., C. Alberti, X. Martinez-Artes, R. Abos-Herrandiz, M. Rosell-Murphy, I Garcia-Alles, I Krier, G. Cantarell, M. Gallego, J. Canela-Soler and R. Orriols, "Pleural Mesothelioma in Relation to Meteorological Conditions and Residential Distance from an Industrial Source of Asbestos", Occup. Environ. Med. 2013; 00:1-3.

4 Conclusions and Opinions

1. The plaintiffs have provided no reliable scientific information to suggest that airborne concentrations of asbestos were anything above background levels in Marshfield.

2. The only air sampling we have for the period in question suggests concentrations in the community were background levels which were orders of magnitude lower than those potentially experienced in the workplace.

3. Other than actual measurements, the only scientifically valid method for estimating ambient air concentrations is air quality modeling. The use of air quality modeling to determine ambient air concentrations is a standard practice in atmospheric science. Both the models themselves and the supporting meteorological data needed by the models are readily available. Plaintiffs have not conducted any air quality modeling.

4. Plaintiffs have cited and relied upon published studies of large asbestos mines or cement facilities as indication of environmental impacts of asbestos facilities in general. Based on the size, type and production volume of the Marshfield facility, the Weyerhaeuser facility cannot be reasonably compared to these facilities. These studies provide no relevant information on ambient concentrations of asbestos in Marshfield.

5. Other than the measurements Mr. Wendlick took in the community in 1975, plaintiffs have provided no reliable scientific information on community concentrations of asbestos in Marshfield.